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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,130	10/26/2006	Jindrich Vosahlo	5724T-000007/NP	6700

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EXAMINER	
ZIMMERMANN, JOHN P	

ART UNIT	PAPER NUMBER
2861	

MAIL DATE	DELIVERY MODE
08/19/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,130	VOSAHLO ET AL.	
	Examiner	Art Unit	
	John P. Zimmermann	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *125-133,138,140-147,153-162,167,169-171 and 173-175* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *125-133, 138, 140-147, 153-162, 167, 169-171, & 173-175* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *23 July 2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. With respect to applicant's Amendments to the claims:

   a. **Claims 155, 169, 170, & 171** have been amended and considered as such.

   b. **Claims 134-137, 139, 148-152, 163-166, 168, & 172** have been cancelled as requested.

   c. **Claims 173-175** have been added and considered as such.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 169 & 173** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

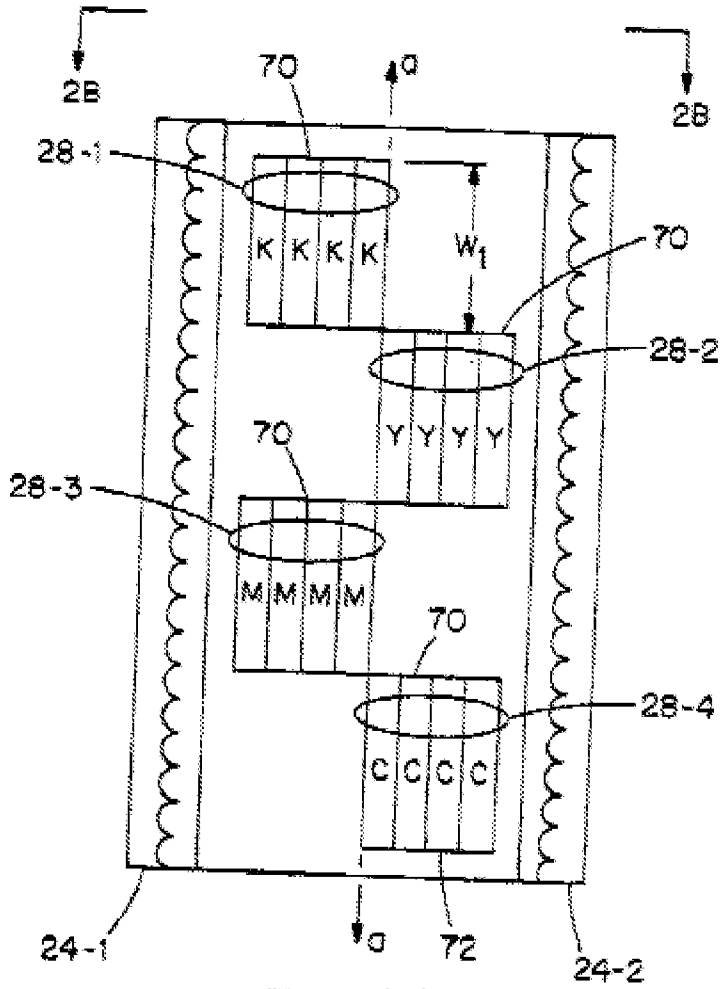
4. The term "substantially" in **claims 169 & 173** is a relative term which renders the claim indefinite. The terms "the same number" & "parallel to the row" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. **Claims 125-127, 129, 130, 132, 133, 138, 140-142, 144-146, 154-156, 158, 160, 161, 167, 169-171, & 173-175** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cleary et al.** (US 2002/0149660 A1) in further view of **Ostler et al.** (US 2001/0046652 A1).

a. As related to independent **claim 126,** Cleary et al. discloses a radiation source for use in curing fluid in a printer comprising an array of LEDs (24) that comprises adjacent rows of LEDs (24-1, 24-2). The rows of LEDs comprise a plurality of LEDs arranged in a row direction [i.e. a multiplicity of light emitting diodes] are offset from each other across the printheads (28) (Cleary et al. – Summary, Page 1, Paragraph 6 and Figure 2A, shown below).



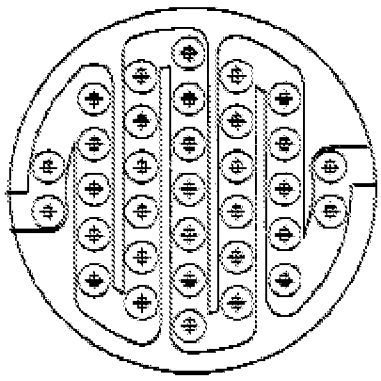
Cleary et al. -

FIG. 2A

b. Continuing with **claim 126,** Cleary et al. also teaches various embodiments of this aspect of the invention to include other sources of radiation besides those discussed specifically (Cleary et al. – Summary, Page 1, Paragraph 7 and Detailed Description, Page 4, Paragraph 47). Cleary et al. ***does not*** specifically teach the row of LEDs is offset from an adjacent row of LEDs in a direction substantially parallel to the row direction. ***However,*** Ostler et al. teaches a radiation source for curing fluid, the source comprising an array of LEDs, particularly a plurality of adjacent rows of LEDs and a row of LEDs

offset from an adjacent row of LEDs in a direction parallel to the row direction (Ostler et al. – Title; Abstract; & Figure 1110, shown below).

Ostler et al. -
FIGURE 1110



Given the same field of endeavor, specifically the use of an array of Light Emitting Diodes (LEDs) as a radiation source to cure a liquid material, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the LED array of a multiplicity of LEDs used to cure radiation-curable ink as taught by Cleary et al. with the specific layout of the LEDs in an array of LEDs for curing the radiation-curable liquid as taught by Ostler et al., in an effort to provide the number of diodes necessary to achieve the output power to cure the material while adequately managing the heat to avoid heat damage to the curing light as well as the recording medium [i.e. the patient] (Ostler et al. – Background, Page 1, Paragraph 2 and Objects, Page 1, Paragraph 4).

c. As related to dependent **claim 127,** the combination of Cleary et al. and Ostler et al. remains as applied above, and continues to teach the adjacent rows of LEDs are offset so that adjacent LEDs in the adjacent rows do not align in a direction substantially perpendicular to the rows of LEDs (Ostler et al. – Figure 1110, shown above).

d. As related to dependent **claim 128,** the combination of Cleary et al. and Ostler et al. remains as applied above, and continues to teach the source comprises N rows of LEDs, the LEDs of each row having a pitch of w along the row direction, and wherein each row of LEDs is offset by Yw/N from an adjacent row, wherein Y, w, and N are integers (Ostler et al. – Figure 1110, shown above).

e. As related to dependent **claim 129,** the combination of Cleary et al. and Ostler et al. remains as applied above, and continues to teach the radiation source is adapted to emit UV radiation (Cleary et al. – Detailed Description, Page 3, Paragraph 37).

f. As related to dependent **claim 130,** the combination of Cleary et al. and Ostler et al. remains as applied above, and continues to teach that the source is elongate (Cleary et al. – Figure 2A, shown previously).

g. As related to dependent **claim 132,** the combination of Cleary et al. and Ostler et al. remains as applied above, and continues to teach that the source cures ink in an inkjet printer. The light emitting diodes (LEDs) expose the ink to ultraviolet radiation that sets or partially cures the ink beginning the curing process. The ink can then be fully cured with more UV radiation (Cleary et al. – Detailed Description, Pages 3-4, Paragraphs 37 & 45).

h. As related to independent **claim 133,** Cleary et al. discloses an apparatus for use in curing radiation-curable fluid, the apparatus comprising a radiation source comprising an array of LEDs (24) that comprises adjacent rows of LEDs (24-1, 24-2). The rows of LEDs comprise a plurality of LEDs arranged in a row direction [i.e. a multiplicity of light emitting diodes] are offset from each other across the printheads (28) (Cleary et al. –

Summary, Page 1, Paragraph 6 and Figure 2A, shown previously). Cleary et al. also teaches various embodiments of this aspect of the invention to include other sources of radiation besides those discussed specifically (Cleary et al. – Summary, Page 1, Paragraph 7 and Detailed Description, Page 4, Paragraph 47). Cleary et al. ***does not*** specifically teach the row of LEDs is offset from an adjacent row of LEDs in a direction along a row. ***However,*** Ostler et al. teaches a radiation source for curing radiation-curable fluid, the source comprising an array of LEDs, particularly a plurality of adjacent rows of LEDs and a row of LEDs offset from an adjacent row of LEDs in a direction along a row (Ostler et al. – Title; Abstract; & Figure 1110, shown previously).

Given the same field of endeavor, specifically the use of an array of Light Emitting Diodes (LEDs) as a radiation source to cure a liquid material, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the LED array of a multiplicity of LEDs used to cure radiation-curable ink as taught by Cleary et al. with the specific layout of the LEDs in an array of LEDs for curing the radiation-curable liquid as taught by Ostler et al., in an effort to provide the number of diodes necessary to achieve the output power to cure the material while adequately managing the heat to avoid heat damage to the curing light as well as the recording medium [i.e. the patient] (Ostler et al. – Background, Page 1, Paragraph 2 and Objects, Page 1, Paragraph 4).

i. As related to dependent **claim 138,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 133** above, and continues to teach a device for cooling the radiation source (Ostler et al. – Detailed Description, Pages 3-5, Paragraphs 59, 62, 64, & 65).

j. As related to independent **claim 140,** Cleary et al. discloses a printer for use in printing a fluid onto a substrate, the printer comprising a radiation source (24) of elements in an array. The printer provides relative movement between the source and the substrate in a curing direction (paragraph 0034). The radiation source comprises an array of radiation emitting elements (Cleary et al. – Figure 2A, Reference #24-1 & #24-2, shown previously). Cleary et al. also teaches various embodiments of this aspect of the invention to include other sources of radiation besides those discussed specifically (Cleary et al. – Summary, Page 1, Paragraph 7 and Detailed Description, Page 4, Paragraph 47). Cleary et al. ***does not*** specifically teach the adjacent elements arranged to not be aligned in the curing direction with each other. ***However,*** Ostler et al. teaches a radiation source for curing radiation-curable fluid, the source comprising an array of LEDs, particularly a plurality of rows of LEDs and the element of the radiation-emitting elements is not aligned in the curing direction with any adjacent elements of the radiation-emitting elements [i.e. each row of LEDs is offset from the adjacent row of LEDs] (Ostler et al. – Title; Abstract; & Figure 1110, shown previously).

Given the same field of endeavor, specifically the use of an array of Light Emitting Diodes (LEDs) as a radiation source to cure a liquid material, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the LED array of a multiplicity of LEDs used to cure radiation-curable ink as taught by Cleary et al. with the specific layout of the LEDs in an array of LEDs for curing the radiation-curable liquid as taught by Ostler et al., in an effort to provide the number of diodes necessary to achieve the output power to cure the material while adequately managing the heat to avoid heat damage to the curing light as well as the

recording medium [i.e. the patient] (Ostler et al. – Background, Page 1, Paragraph 2 and Objects, Page 1, Paragraph 4).

k. As related to dependent **claim 141,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and continues to teach the array comprises a plurality of adjacent rows of elements, wherein a row of elements is offset from an adjacent row of elements in a direction substantially perpendicular to the cure direction (Ostler et al. – Figure 1110, shown previously).

l. As related to dependent **claim 142,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and continues to teach the adjacent rows of elements are offset so that adjacent elements in the adjacent rows do not align in a direction substantially perpendicular to the rows of elements (Ostler et al. – Figure 1110, shown previously).

m. As related to dependent **claim 143,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and continues to teach the source comprises N rows of elements [i.e. LEDs], the elements of each row having a pitch of w along the row direction, and wherein each row of elements is offset by Yw/N from an adjacent row, wherein Y, w, and N are integers (Ostler et al. – Figure 1110, shown above).

n. As related to dependent **claim 144,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and continues to teach the radiation source is adapted to emit UV radiation (Cleary et al. – Detailed Description, Page 3, Paragraph 37).

o. As related to dependent **claim 145** and further dependent **claim 125,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and

continues to teach the elements of the source comprise light emitting diodes [i.e. LEDs] (Cleary et al. – Summary, Page 1, Paragraph 6 and Ostler et al. - Title & Abstract) and the array of light emitting diodes is adapted for use in curing ink in an ink jet printer (Cleary et al. – Detailed Description, Pages 3-4, Paragraphs 37 & 45).

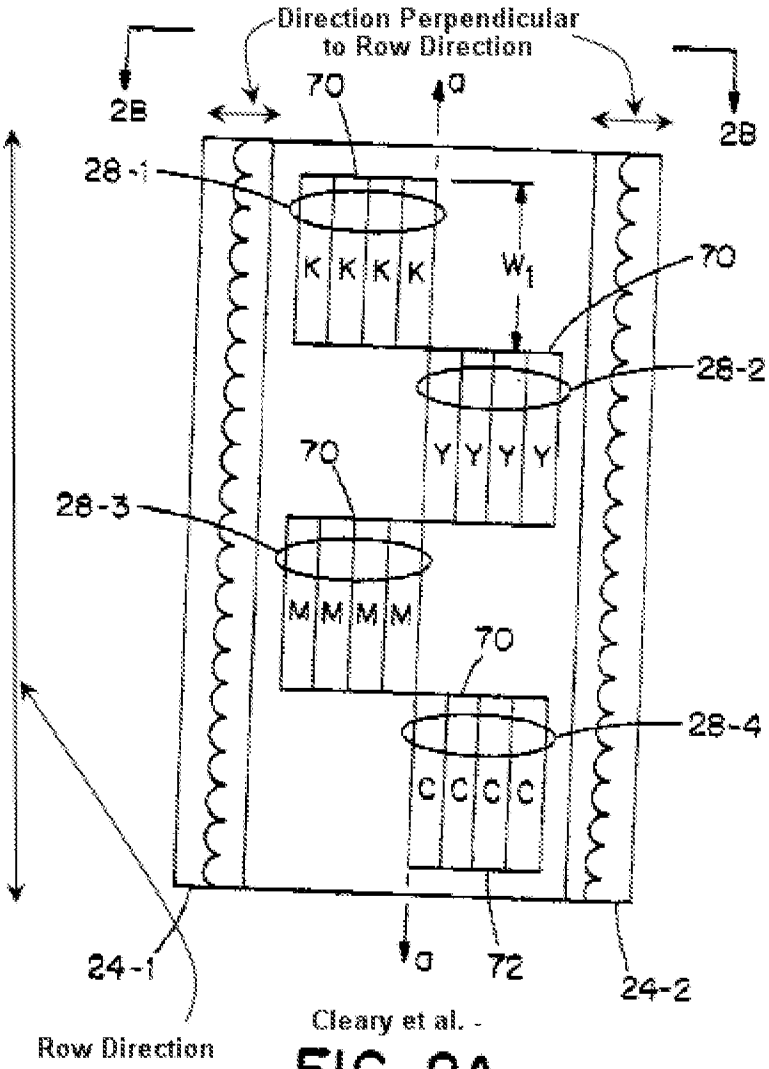
p. As related to dependent **claim 146,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and continues to teach that the source is elongate (Cleary et al. – Figure 2A, shown previously).

q. As related to dependent **claim 153,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and continues to teach the LEDs are tuned to emit over a very narrow bandwidth (Cleary et al. – Detailed Description, Page 3, Paragraph 42). While Cleary et al. does not explicitly disclose that 90% of the radiation emitted has a wavelength in within a 50nm band, it is specified that the LEDs emit radiation over a very narrow bandwidth and as shown in Figure 10B, the vast majority of the radiation is emitted within a wavelength bandwidth close to 50nm. Therefore, it would have been obvious to one of ordinary skill in the art to have at least 90% emitted in this region to eliminate wasted energy and to set and cure the fluid quickly and efficiently.

r. As related to dependent **claim 154,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 140** above, and continues to teach that the fluid is ink (Cleary et al. – Title; Abstract; and Detailed Description, Page 2, Paragraph 34).

s. As related to independent **claim 155,** Cleary et al. discloses an apparatus for use in curing radiation-curable fluid in a printer, the apparatus comprising a radiation source

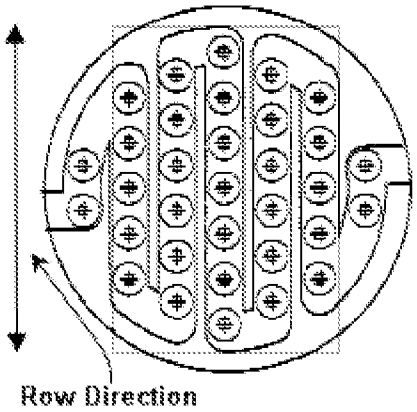
comprising an elongate array of radiation-emitting elements [i.e. LEDs] (24) that comprises a plurality of adjacent rows of elements (24-1, 24-2). The rows of elements comprise a plurality of elements arranged in a row direction [i.e. a multiplicity of light emitting diodes] are offset from each other across the printheads (28) (Cleary et al. – Summary, Page 1, Paragraph 6 and Figure 2A, shown below) and the width of the array in the row direction is greater than the length of the array in a direction perpendicular to the row direction (Cleary et al. – Figure 2A, Reference #24-1, #24-2, and Arrows, shown below). Cleary et al. also teaches various embodiments of this aspect of the invention to include other sources of radiation besides those discussed specifically (Cleary et al. – Summary, Page 1, Paragraph 7 and Detailed Description, Page 4, Paragraph 47). Cleary et al. ***does not*** specifically teach the row of elements is offset from an adjacent row of elements in a direction substantially parallel to a row. ***However,*** Ostler et al. teaches a radiation source for curing radiation-curable fluid, the source comprising an array of radiation-emitting elements [i.e. LEDs], particularly a plurality of adjacent rows of elements and a row of elements offset from an adjacent row of elements in a direction substantially parallel to a row where the width of the substantive portion of the array in the row direction is greater than the length of the array in a direction perpendicular to the row direction (Ostler et al. – Title; Abstract; & Figure 1110, shown below).



Cleary et al. -

FIG. 2A

Ostler et al. -
FIGURE 1110



Given the same field of endeavor, specifically the use of an array of Light Emitting Diodes (LEDs) as a radiation source to cure a liquid material, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the LED array of a multiplicity of LEDs used to cure radiation-curable ink as taught by Cleary et al. with the specific layout of the LEDs in an array of LEDs for curing the radiation-curable liquid as taught by Ostler et al., in an effort to provide the number of diodes necessary to achieve the output power to cure the material while adequately managing the heat to avoid heat damage to the curing light as well as the recording medium [i.e. the patient] (Ostler et al. – Background, Page 1, Paragraph 2 and Objects, Page 1, Paragraph 4).

t. As related to dependent **claim 156,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 155** above, and continues to teach the adjacent rows of elements are offset so that adjacent elements in the adjacent rows do not align in a direction substantially perpendicular to the rows of elements (Ostler et al. – Figure 1110, shown above).

u. As related to dependent **claim 157,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 155** above, and continues to teach the source comprises N rows of elements, the elements of each row having a pitch of w along the row direction, and wherein each row of elements is offset by Yw/N from an adjacent row, wherein Y, w, and N are integers (Ostler et al. – Figure 1110, shown above).

v. As related to dependent **claim 158,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 155** above, and continues to teach the source is adapted to emit UV radiation (Cleary et al. – Detailed Description, Page 3, Paragraph 37).

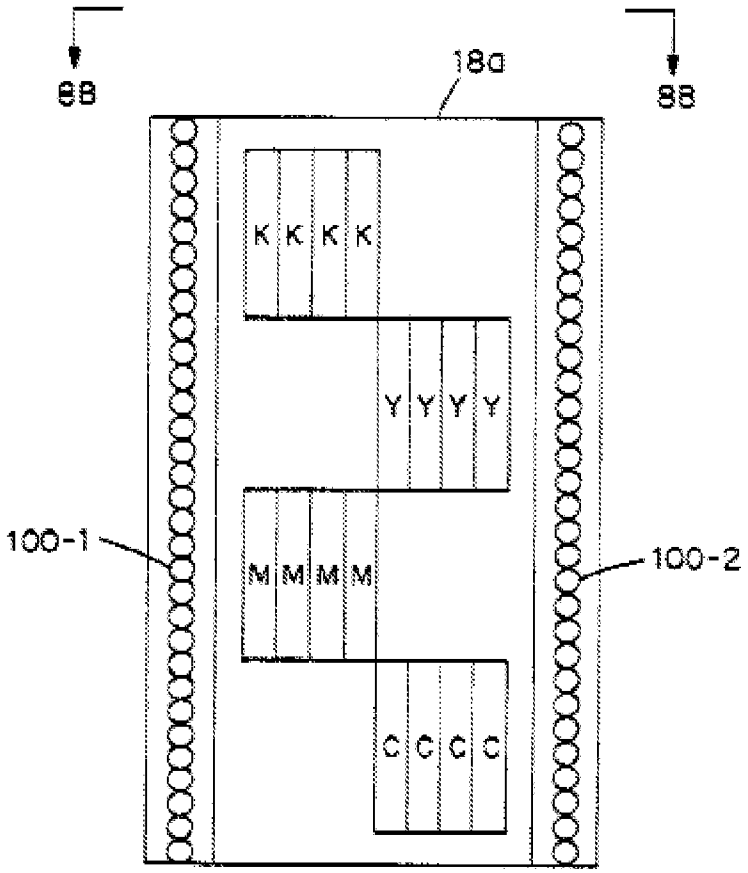
w. As related to dependent **claim 159,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 155** above, and continues to teach the LEDs are tuned to emit over a very narrow bandwidth (Cleary et al. – Detailed Description, Page 3, Paragraph 42). While Cleary et al. does not explicitly disclose that 90% of the radiation emitted has a wavelength in within a 50nm band, it is specified that the LEDs emit radiation over a very narrow bandwidth and as shown in Figure 10B, the vast majority of the radiation is emitted within a wavelength bandwidth close to 50nm. Therefore, it would have been obvious to one of ordinary skill in the art to have at least 90% emitted in this region to eliminate wasted energy and to set and cure the fluid quickly and efficiently.

x. As related to dependent **claim 160,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 155** above, and continues to teach the elements comprise light emitting diodes [i.e. LEDs] (Cleary et al. – Summary, Page 1, Paragraph 6 and Ostler et al. - Title & Abstract).

y. As related to dependent **claim 161,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 155** above, and continues to teach that the source is elongate (Cleary et al. – Figure 2A, shown previously).

z. As related to dependent **claim 167,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 155** above, and continues to teach a device for cooling the radiation source (Ostler et al. – Detailed Description, Pages 3-5, Paragraphs 59, 62, 64, & 65).

aa. As related to independent **claim 169,** Cleary et al. discloses a radiation source for use in curing a fluid in a printer, the source includes an array of radiation emitting elements (24-1, 100-1) which comprises a plurality of adjacent rows of elements (24-1, 24-2). The rows of elements comprise a plurality of elements arranged in a row direction [i.e. a multiplicity of light emitting diodes] are offset from each other across the printheads (28) (Cleary et al. – Summary, Page 1, Paragraph 6 and Figure 2A, shown previously). While Cleary et al. teaches each row of the plurality of rows including substantially the same number of radiation-emitting elements (Cleary et al. – Figure 8A, Reference #100-1 & 100-2, shown below), Cleary et al. ***does not*** specifically teach the row of elements is offset from an adjacent row of elements in a direction substantially parallel to a row. ***However,*** Ostler et al. teaches a radiation source for curing radiation-curable fluid, the source comprising an array of radiation-emitting elements [i.e. LEDs], particularly a plurality of adjacent rows of elements and a row of elements offset from an adjacent row of elements in a direction substantially parallel to a row (Ostler et al. – Title; Abstract; & Figure 1110, shown previously).



Cleary et al. -
FIG. 8A

Given the same field of endeavor, specifically the use of an array of Light Emitting Diodes (LEDs) as a radiation source to cure a liquid material, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the LED array of a multiplicity of LEDs used to cure radiation-curable ink as taught by Cleary et al. with the specific layout of the LEDs in an array of LEDs for curing the radiation-curable liquid as taught by Ostler et al., in an effort to provide the number of diodes necessary to achieve the output power to cure the material while adequately managing the heat to avoid heat damage to the curing light as well as the recording medium [i.e. the patient] (Ostler et al. – Background, Page 1, Paragraph 2 and Objects, Page 1, Paragraph 4).

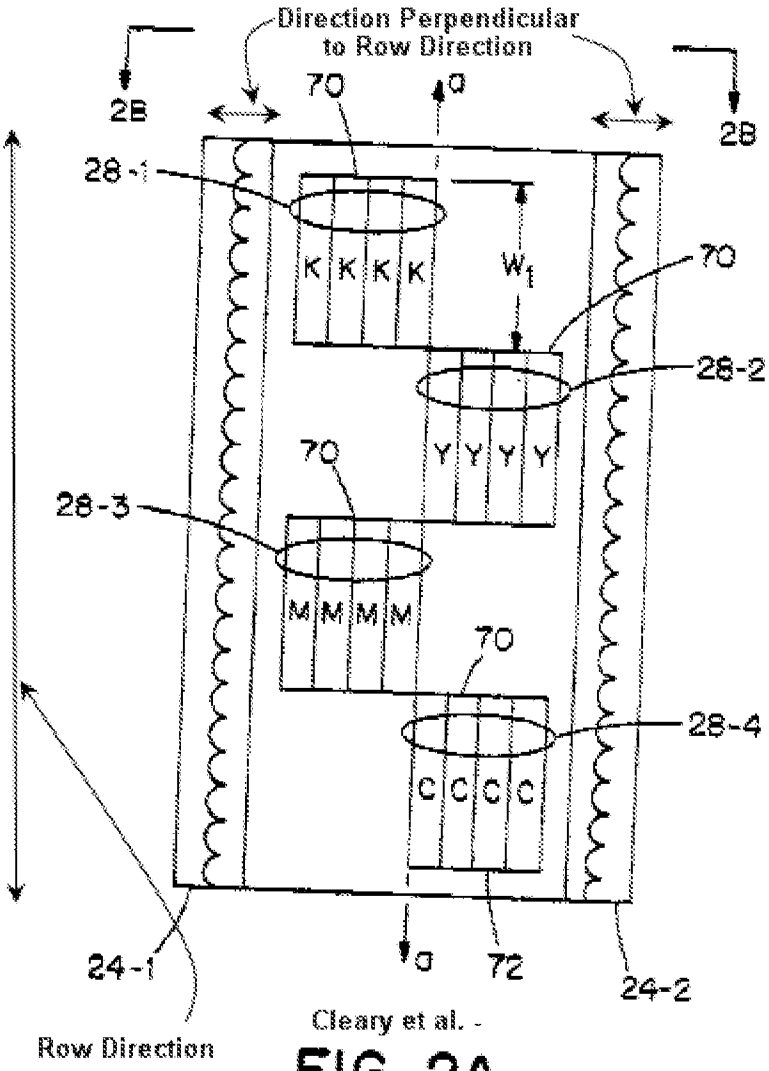
bb. As related to independent **claim 170,** the combination of Cleary et al. and Ostler et al. remains as applied above, and continues to teach a radiation source for use in curing fluid in a printer, the source comprising an elongate array of LEDs, wherein the width of the array in the row direction is greater than the length of the array in a direction perpendicular to the row direction (Cleary et al. – Figure 2A, Reference #24-1, #24-2, and Arrows, shown previously) and wherein the array of LEDs comprises N adjacent rows of LEDs, the LEDs of each row having a pitch of w along the row direction, and wherein each row of LEDs is offset by Yw/N from an adjacent row, wherein Y, w, and N are integers and again, where the width of the substantive portion of the array in the row direction is greater than the length of the array in a direction perpendicular to the row direction (Ostler et al. – Figure 1110, shown previously).

cc. As related to independent **claim 171,** the combination of Cleary et al. and Ostler et al. remains as applied above, and continues to teach a printer for use in printing a printing fluid onto a substrate, the printer comprising a radiation source for curing the fluid, wherein the printer is arranged to provide relative movement between the radiation source and the substrate in a curing direction during the curing operation (Cleary et al. – Title; Abstract; and Detailed Description, Paragraph 34). The radiation source comprises a plurality of radiation-emitting elements in an elongate array, wherein the width of the array in the row direction is greater than the length of the array in a direction perpendicular to the row direction (Cleary et al. – Figure 2A, Reference #24-1, #24-2, and Arrows, shown previously). Meanwhile the arrangement of the elements in the array

being such that they are not aligned in a column substantially aligned with the curing direction, wherein the source comprises N rows of elements [i.e. LEDs], the elements of each row having a pitch of w along the row direction, and wherein each row of elements is offset by Yw/N from an adjacent row, wherein Y, w, and N are integers and again, where the width of the substantive portion of the array in the row direction is greater than the length of the array in a direction perpendicular to the row (Ostler et al. – Figure 1110, shown previously).

dd. As related to independent **claim 173,** Cleary et al. discloses a printer for use in printing a printing fluid [i.e. ink] onto a substrate, the printer comprising a radiation source for curing the fluid, wherein the printer provides relative movement between the radiation source and the substrate in a curing direction (paragraph 0034) during the curing operation. The radiation source comprises an array of radiation emitting [i.e. LEDs] (24) elements (Cleary et al. – Figure 2A, Reference #24-1 & #24-2, shown previously) which are arranged in a plurality of adjacent rows of elements (24-1, 24-2). The rows of elements comprise a plurality of elements arranged in a row direction [i.e. a multiplicity of light emitting diodes] are offset from each other across the printheads (28) (Cleary et al. – Summary, Page 1, Paragraph 6 and Figure 2A, shown below) and the width of the array in the row direction is greater than the length of the array in a direction perpendicular to the row direction (Cleary et al. – Figure 2A, Reference #24-1, #24-2, and Arrows, shown below). Cleary et al. also teaches various embodiments of this aspect of the invention to include other sources of radiation besides those discussed specifically (Cleary et al. – Summary, Page 1, Paragraph 7 and Detailed Description, Page 4,

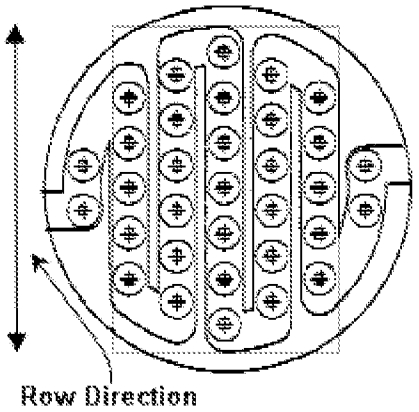
Paragraph 47). Cleary et al. ***does not*** specifically teach each row is offset from another row of the plurality of rows in a direction substantially parallel to the row direction. ***However,*** Ostler et al. teaches a radiation source for curing radiation-curable fluid, the source comprising an array of radiation-emitting elements [i.e. LEDs], particularly a plurality of adjacent rows of elements and a row of elements offset from an adjacent row of elements in a direction substantially parallel to a row where the width of the substantive portion of the array in the row direction is greater than the length of the array in a direction perpendicular to the row direction (Ostler et al. – Title; Abstract; & Figure 1110, shown below).



Cleary et al. -

FIG. 2A

Ostler et al. -
FIGURE 1110



Given the same field of endeavor, specifically the use of an array of Light Emitting Diodes (LEDs) as a radiation source to cure a liquid material, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the LED array of a multiplicity of LEDs used to cure radiation-curable ink as taught by Cleary et al. with the specific layout of the LEDs in an array of LEDs for curing the radiation-curable liquid as taught by Ostler et al., in an effort to provide the number of diodes necessary to achieve the output power to cure the material while adequately managing the heat to avoid heat damage to the curing light as well as the recording medium [i.e. the patient] (Ostler et al. – Background, Page 1, Paragraph 2 and Objects, Page 1, Paragraph 4).

ee. As related to dependent **claim 174,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 173** above, and continues to teach the plurality of rows of elements are mounted in a common housing (Cleary et al. – Figure 2A and Ostler et al. – Figure 1110, both shown above).

ff. As related to dependent **claim 175,** the combination of Cleary et al. and Ostler et al. remains as applied to **claim 173** above, and Cleary et al. as modified by Ostler et al. clearly teaches the plurality of rows of elements are all arranged on one side of the

printhead arrangement (Cleary et al. – Figure 2A, Reference #24-1 modified to include the plurality of rows of Ostler et al. – Figure 1110, both shown above).

5. **Claims 131, 147, & 162** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cleary et al.** (US 2002/0149660 A1) and **Ostler et al.** (US 2001/0046652 A1) as applied above, and in further view of **Mills et al.** (US 2003/0035037 A1).

As related to dependent **claim 131**, **claim 147**, & **claim 162**, the combination of Cleary et al. and Ostler et al. clearly teach the limitations of **claim 126, claim 140, & claim 155** above, but ***does not*** specifically teach a means for varying the power of the radiation source. ***However***, Mills et al. teaches a printing system with a similar radiation source of LEDs. A controller increases and decreases the current to the LEDs to adjust the timing, intensity, and duration of the radiation emission (Mills et al. - paragraphs 0067, 0078). In other words, the supplied current adjusts the pulse rate of UV radiation from the LED to precisely control the amount and timing of energy that is transmitted. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation source of the combination of Cleary et al. and Ostler et al. with the teaching of Mills et al. so that the amount of power used to emit radiation can be varied to control and conserve during the printing and curing process.

Response to Arguments

6. Applicant's arguments filed 20 April 2009 have been fully considered but they are not persuasive. Applicant's arguments are focused around the central argument that "the skilled person would not have considered the teaching of Ostler..." Applicant first alleges that the

skilled person looking to improve the curing ink in a printer would not have looked to documents relating to the curing of dental composites" because "the size of radiation sources for curing dental composites are significantly smaller..." and "the size of the substrate on which the curable material is located is many times larger in a printer…" Examiner respectfully points out that Applicant makes the case for the Examiner by pointing out the size of the radiation sources, as the radiation source of Cleary et al. is placed on a moveable carriage, this would clearly call for the smallest, most efficient, and relatively least obtrusive radiation source available at the time of the invention, which Cleary et al. even mentions "a multiplicity of light emitting diodes." By mentioning the size of the substrate on which the curable material is located, Applicant again makes the case for the Examiner by referencing that which was well known to one of ordinary skill in the art at the time of the invention, the need to provide a substantial amount of radiation over a substantial amount of area, using the smallest, most efficient, and relatively least obtrusive radiation source available at the time of the invention. The need for lightweight, reduced size radiation sources, would have clearly motivated one of ordinary skill in the art at the time of the invention to look to all avenues available at the time for radiation sources. In response to applicant's argument that "the radiation sources in Ostler are not for use in a printer," the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

7. Applicant continues to argue that "it is this relative movement in a printer…" and "therefore Ostler is not relevant to the present invention..." Examiner respectfully disagrees as Cleary et al. clearly teaches the relative movement between the substrate and the radiation source, Ostler et al. is a secondary reference that is used to modify one of Cleary et al.'s many radiation sources.

8. Applicant continues to argue and alleges "that Ostler teaches away from the present invention," by referencing one singular variation of Ostler et al. [i.e. Figure 600] while ignoring the variation of Ostler et al. that specifically teaches directing the rays in one direction which would ensure the reduction of significant variation in the radiation dose emitted along the length of the source perpendicular to the curing direction (Applicant's stated desire – Remarks Page 16, Paragraph 2).

9. In response to Applicant's argument that "there is no teaching in Ostler as to how those units would be mounted for movement, in particular with regard to their orientation," a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this case extending the adjacent rows of Ostler et al. to efficiently modify Cleary et al.'s radiation source to incorporate the multiplicity of light emitting diodes as Cleary et al. teaches would result in no structural difference between the claimed invention and the prior art.

10. The remaining arguments related to the amendments to the claims have been addressed in the rejection put forth above. As no further arguments have been made all dependent claims have been rejected accordingly.

Conclusion

7. ***Examiner's Note:*** Examiner has cited particular Figures & Reference Numbers, Columns, Paragraphs and Line Numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

11. Applicant's amendments including newly added **claims 173-175** necessitated the new ground(s) of rejection presented in this Office action. The arguments as to the patentability of the unamended claims were nonpersuasive and addressed above and therefore the rejection as put forth previously and reiterated above stands. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

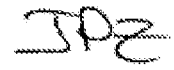
however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Zimmermann whose telephone number is (571)270-3049. The examiner can normally be reached on Monday - Thursday, 7:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on 571-272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW LUU/
Supervisory Patent Examiner, Art Unit 2861



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